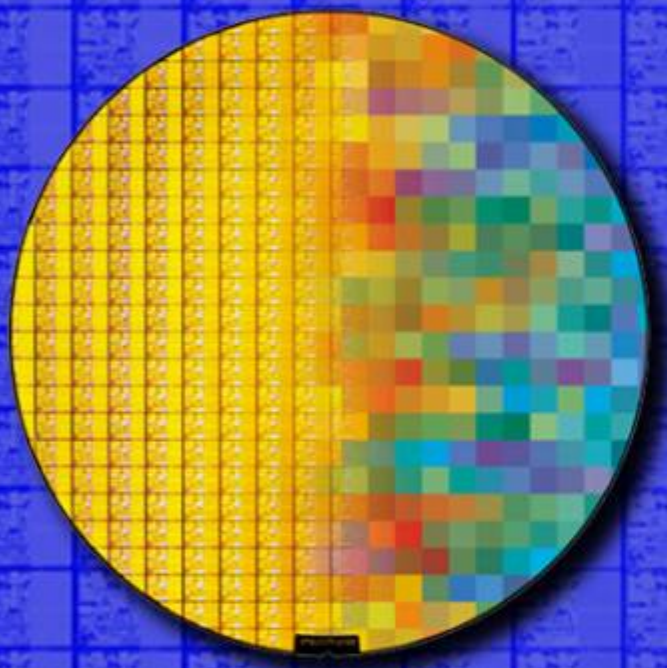

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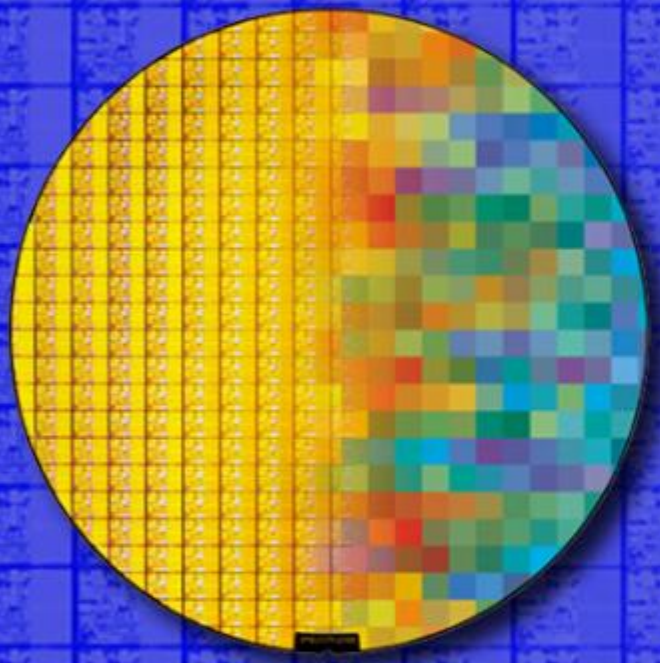

The NEW Net

Pat Gelsinger
Chief Technology Officer

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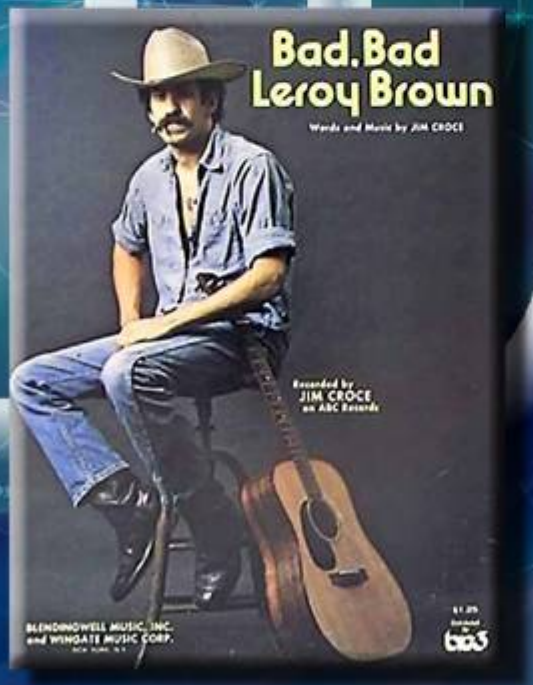

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Vinton Cerf
Senior VP & Chief Strategist
MCI Worldcom
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CHALLENGES
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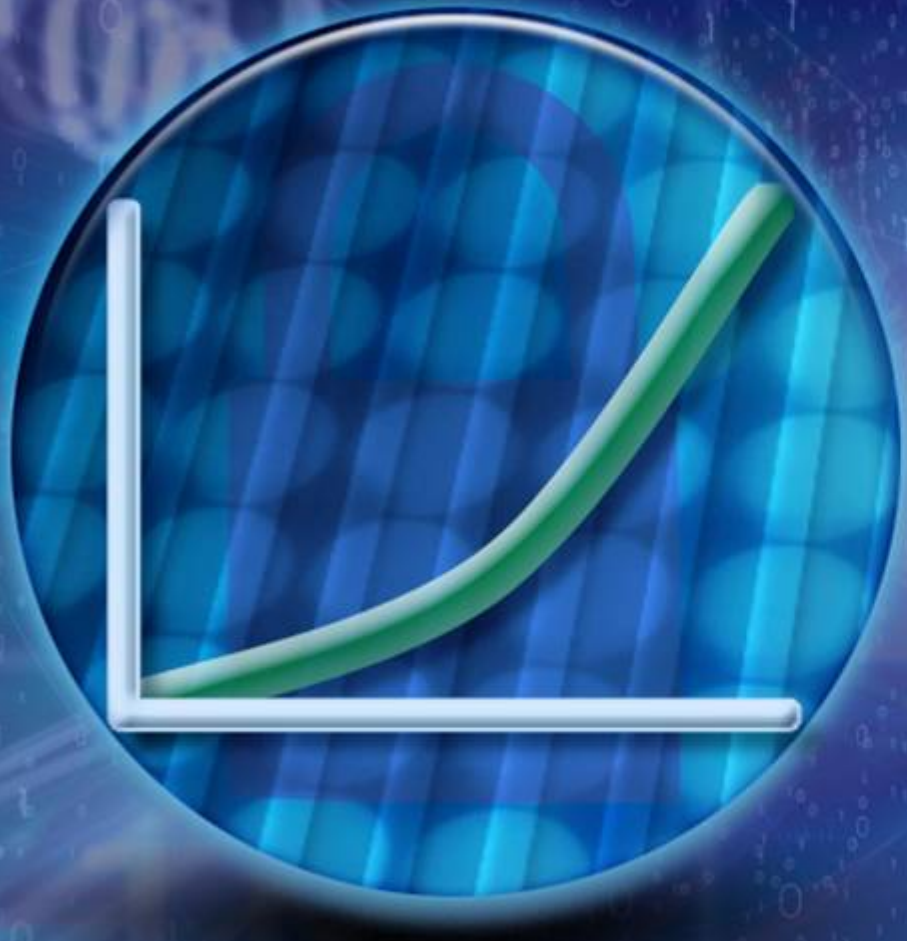
Capacity



Addressability

Bandwidth

Transient Peak Loads

Variable Quality
Of Service

Reliability

Points of Failure

Inconsistent

Unpredictable

Costly

Security

Vulnerability
More People
More Points

New Threats

Enforceability

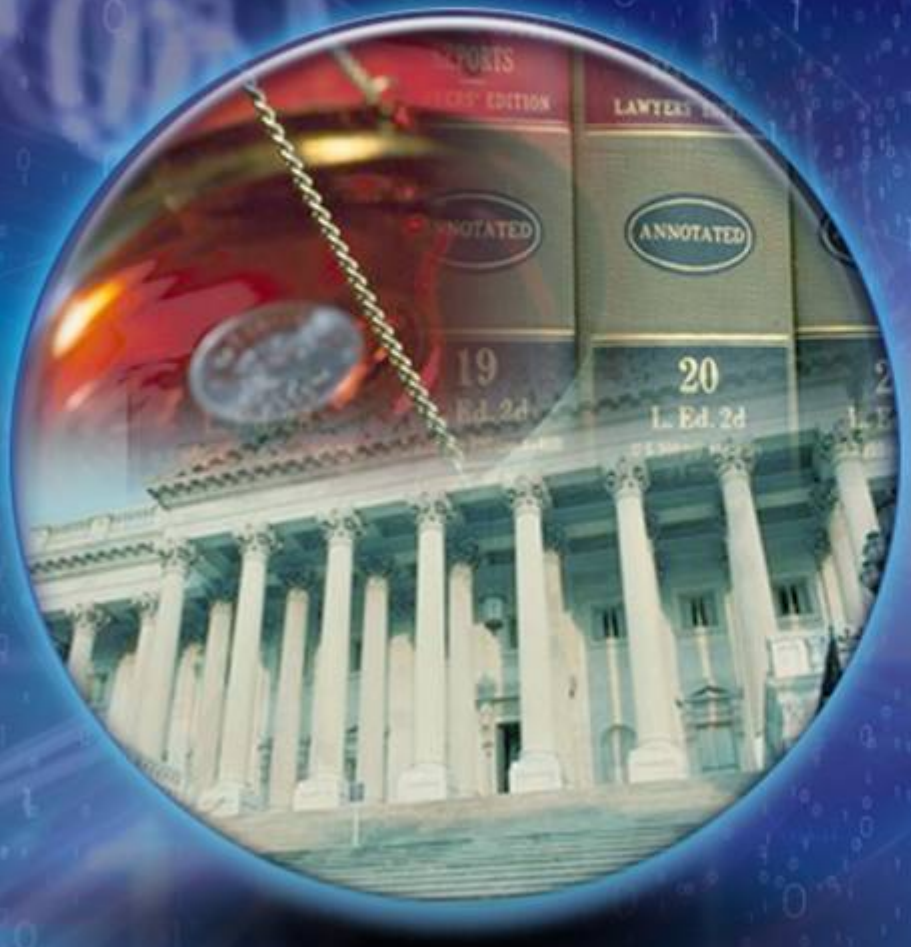
Accessibility

Connectivity

Economics

Geography

Regulatory



Privacy

Taxation

National Security


The limitations
are architectural


IEEE TRANSACTIONS ON
COMMUNICATIONS
MAY 1974 VOLUME COM-22 NUMBER 5
A PUBLICATION OF THE IEEE COMMUNICATIONS SOCIETY
PAPERS
CONCISE PAPERS
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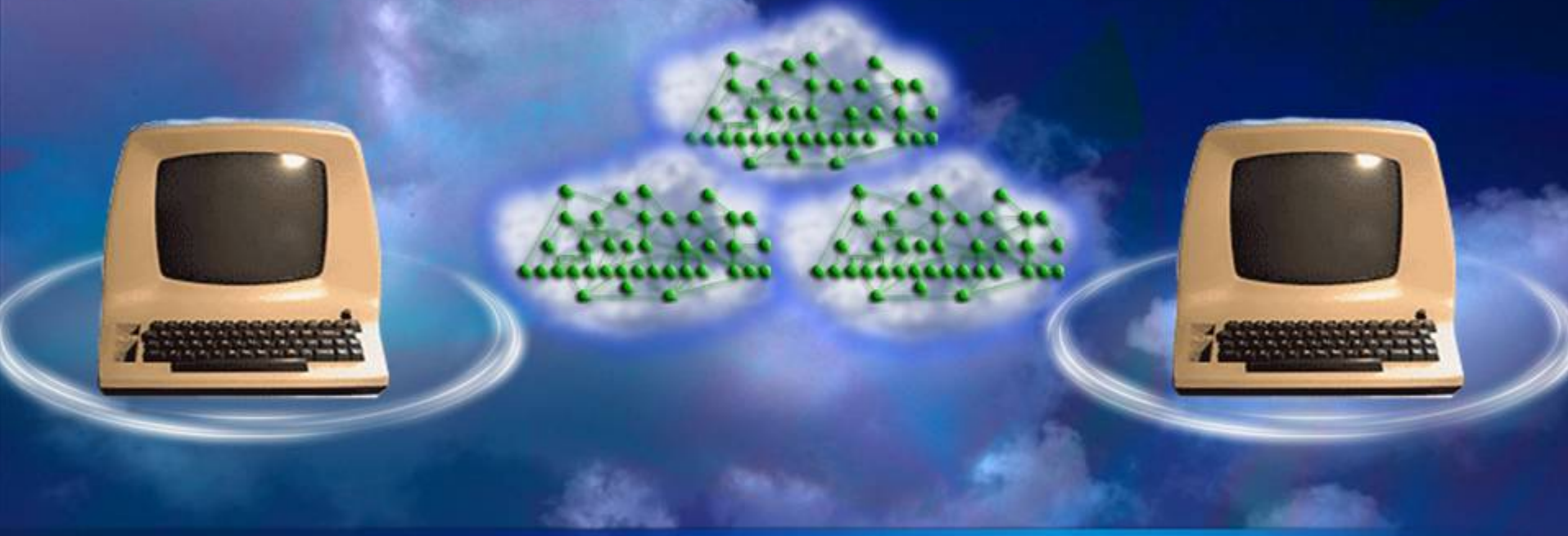
Today's Internet is like a 1973 Buick refitted with air bags and emissions controls. Its decades-old infrastructure has been rigged out with the Web and all it enables (like e-commerce), plus streaming media, peer-to-peer file sharing and videoconferencing; but it's still a 1973 Buick.

Technology Review magazine, September 2003

The Internet has reached a plateau in terms of what it can do. The right thing to do is to start over at another level.

Larry Peterson
Chair of Computer Sciences
Princeton University

Pre-Internet

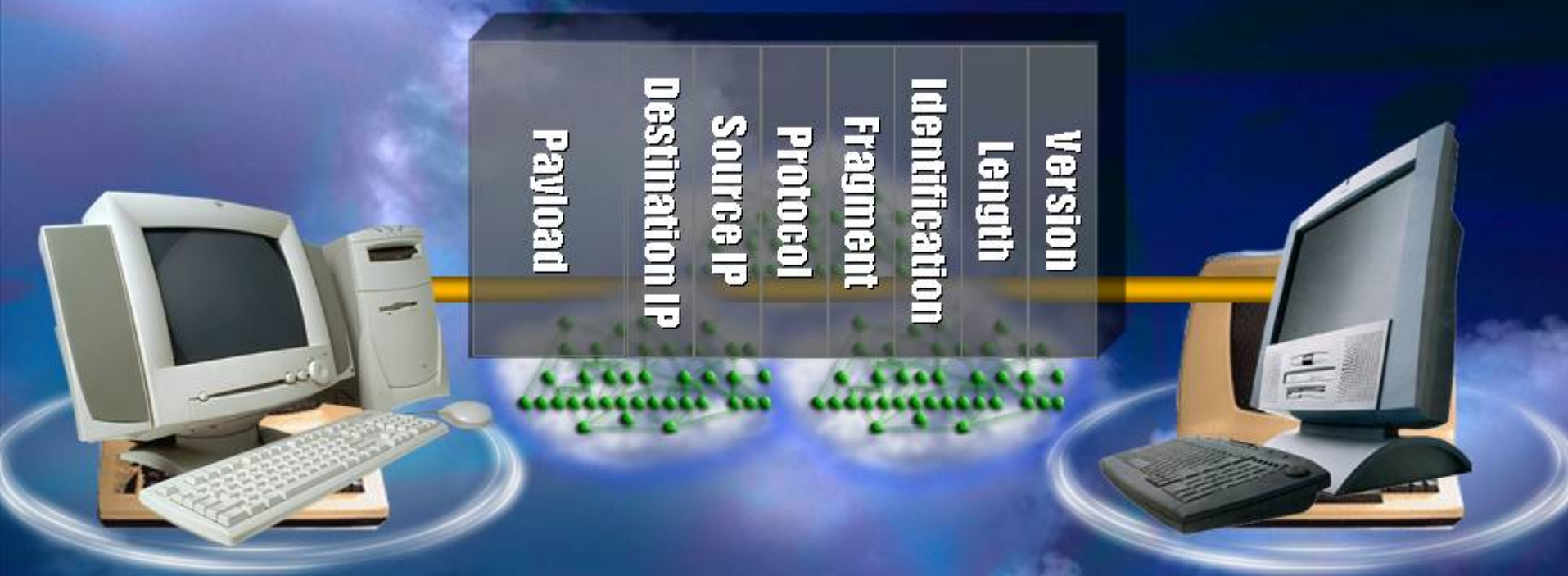


Multiple heterogeneous networks

Communication across multiple networks was impossible

Multiple protocols, multiple data formats, ports/channels

Internet – TCP/IP



IP hides all details in underlying heterogeneous networks

Providing end-to-end transparency

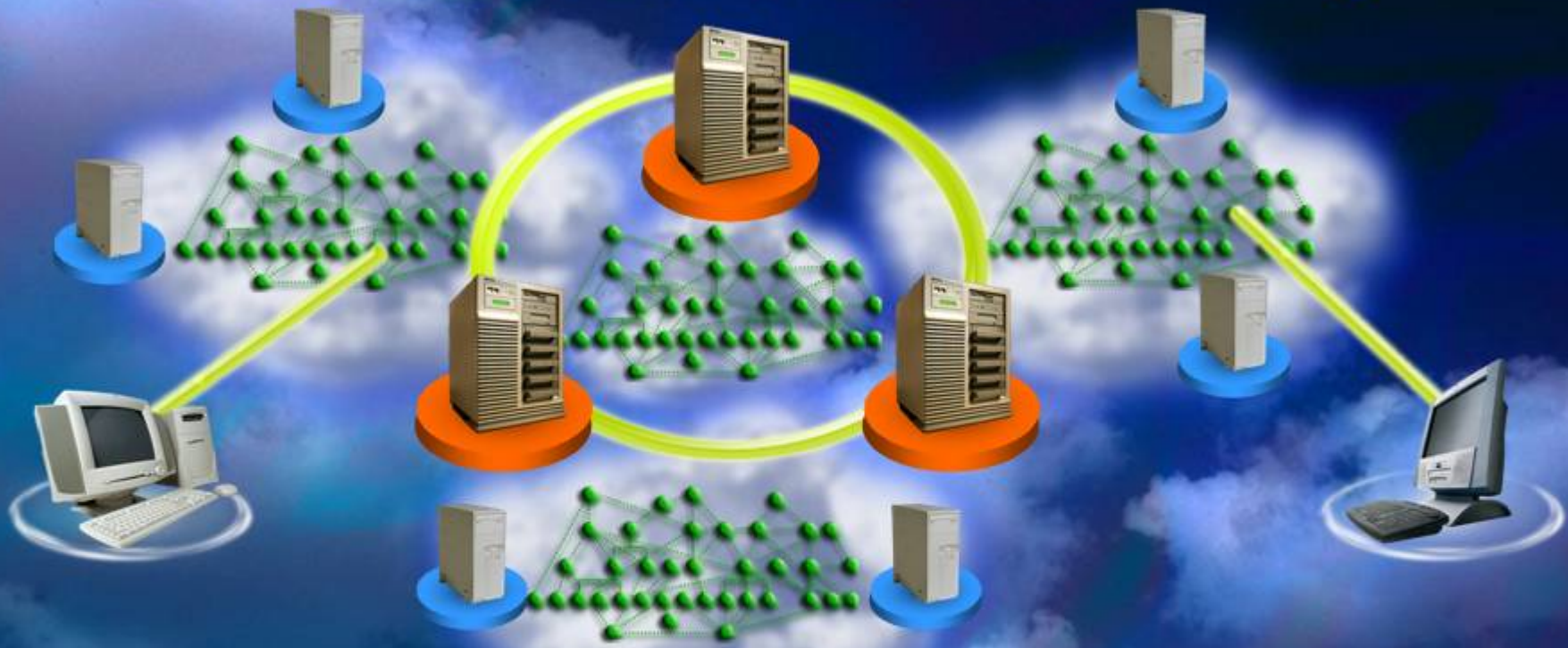
The Internet Today

Complexity of physical network has exploded

Greater inconsistency in performance and reliability


The solution
is a network overlay

Computational Services Overlay



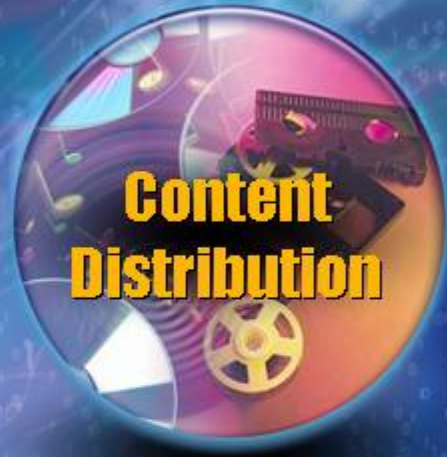
Platform for new services

Infrastructure services

End-user services

Network-aware, adaptive

Today's Net Enhancements



Computational Services Overlay

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Challenges

Capacity

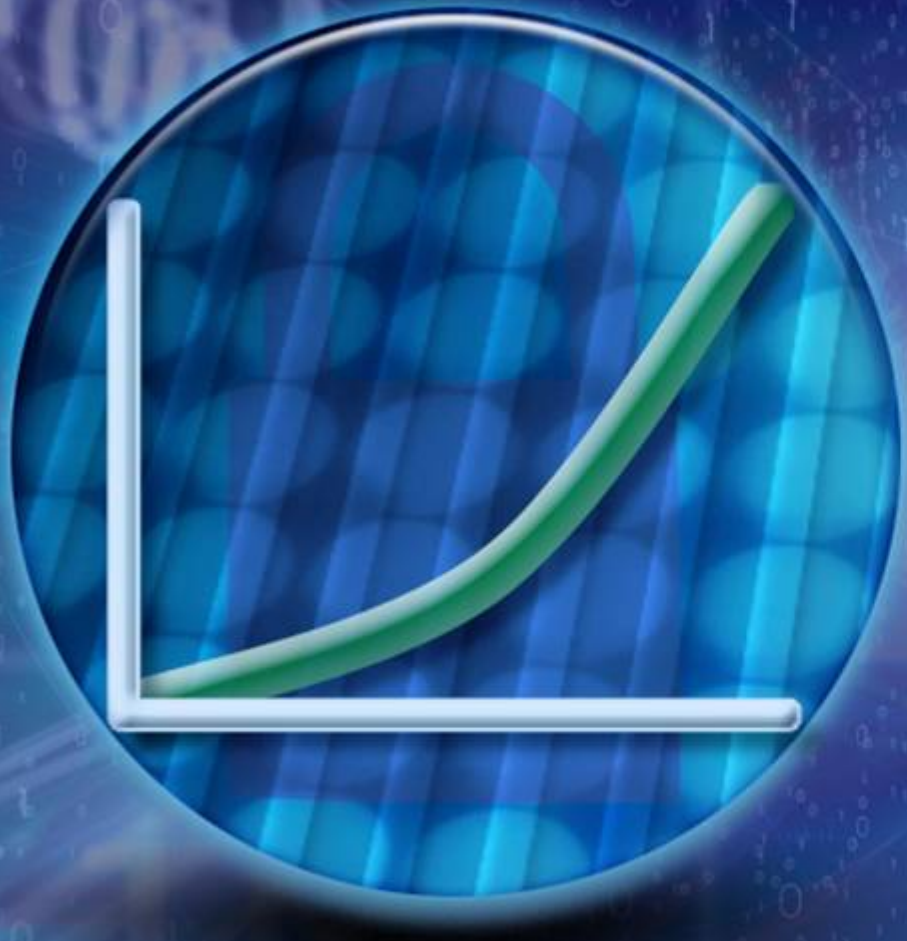
Reliability

Security

Accessibility

Regulatory

Capacity



IPv6

Adaptive traffic monitoring

Instantaneous response to demand

Reliability

Self diagnose

Self heal

Self routing

Security

Secure and trusted platforms

IPSec

Early warning systems

Effective response to large-scale attacks

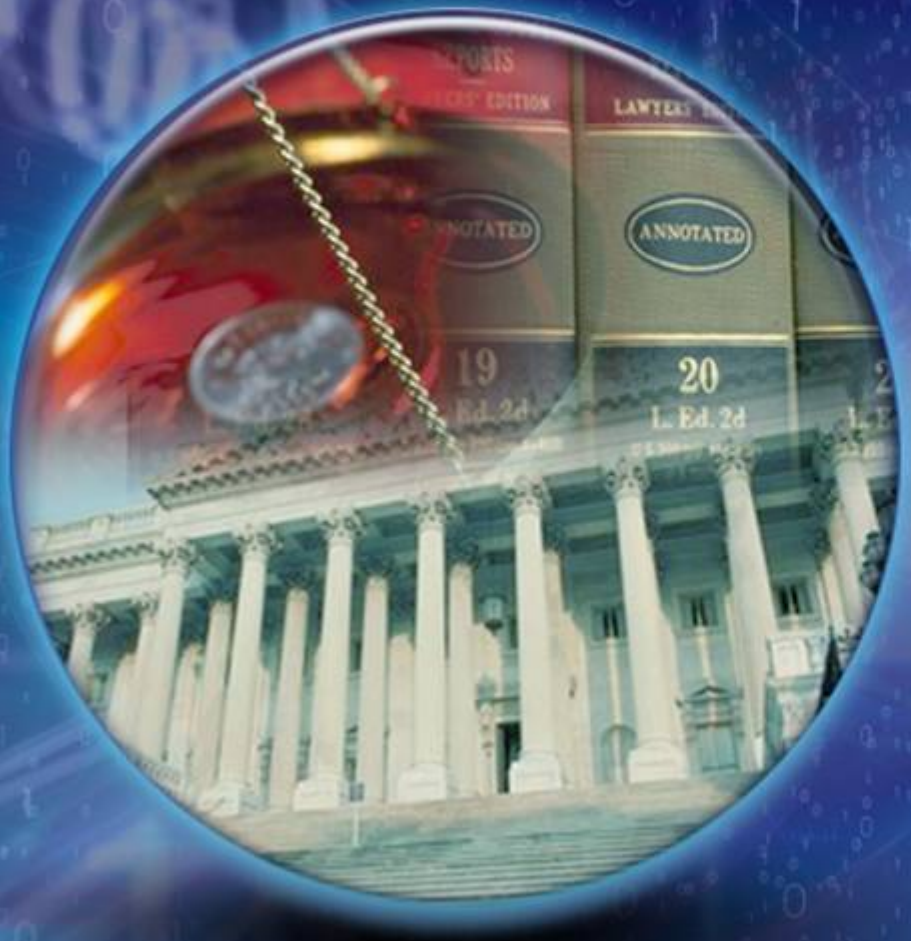
Accessibility

Delay-tolerant computing

Transcoding

Transrating

Regulatory



Visibility

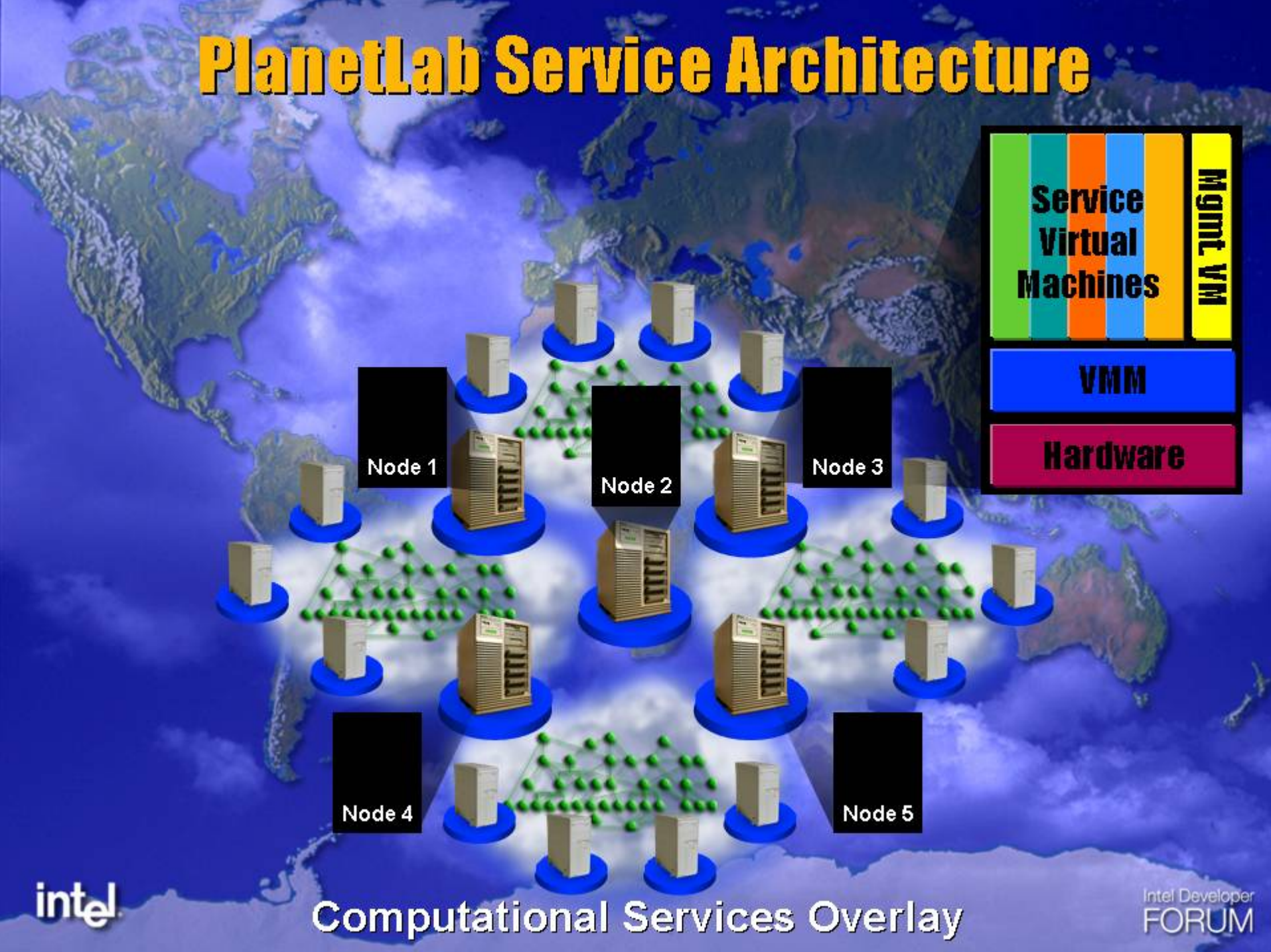
Flexibility

Location aware


PLANETLAB
www.planet-lab.org
Other brands and names are the property of their respective owners.


PlanetLab 2002
101 Machines
41 Sites
7 Countries
PlanetLab 2004
440 Machines
194 Sites
22 Countries

PlanetLab Service Architecture



Computational Services Overlay

PlanetLab Services are Running

Infrastructure Services & End-user Services

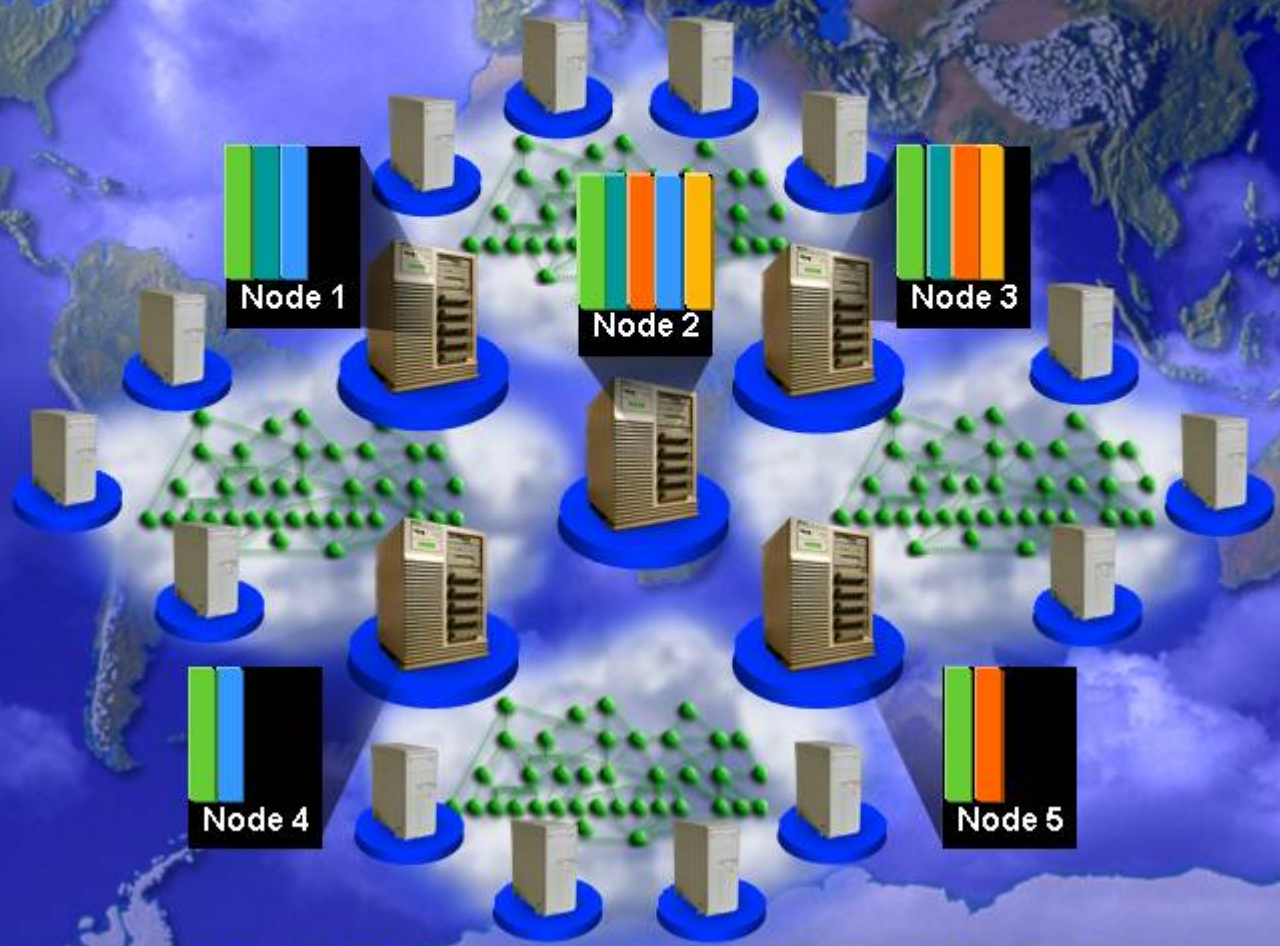
Event Processing

Network Mapping

Distributed Hash Tables

Content Distribution

Web Casting



Computational Services Overlay

PHI @ Intel Research Berkeley

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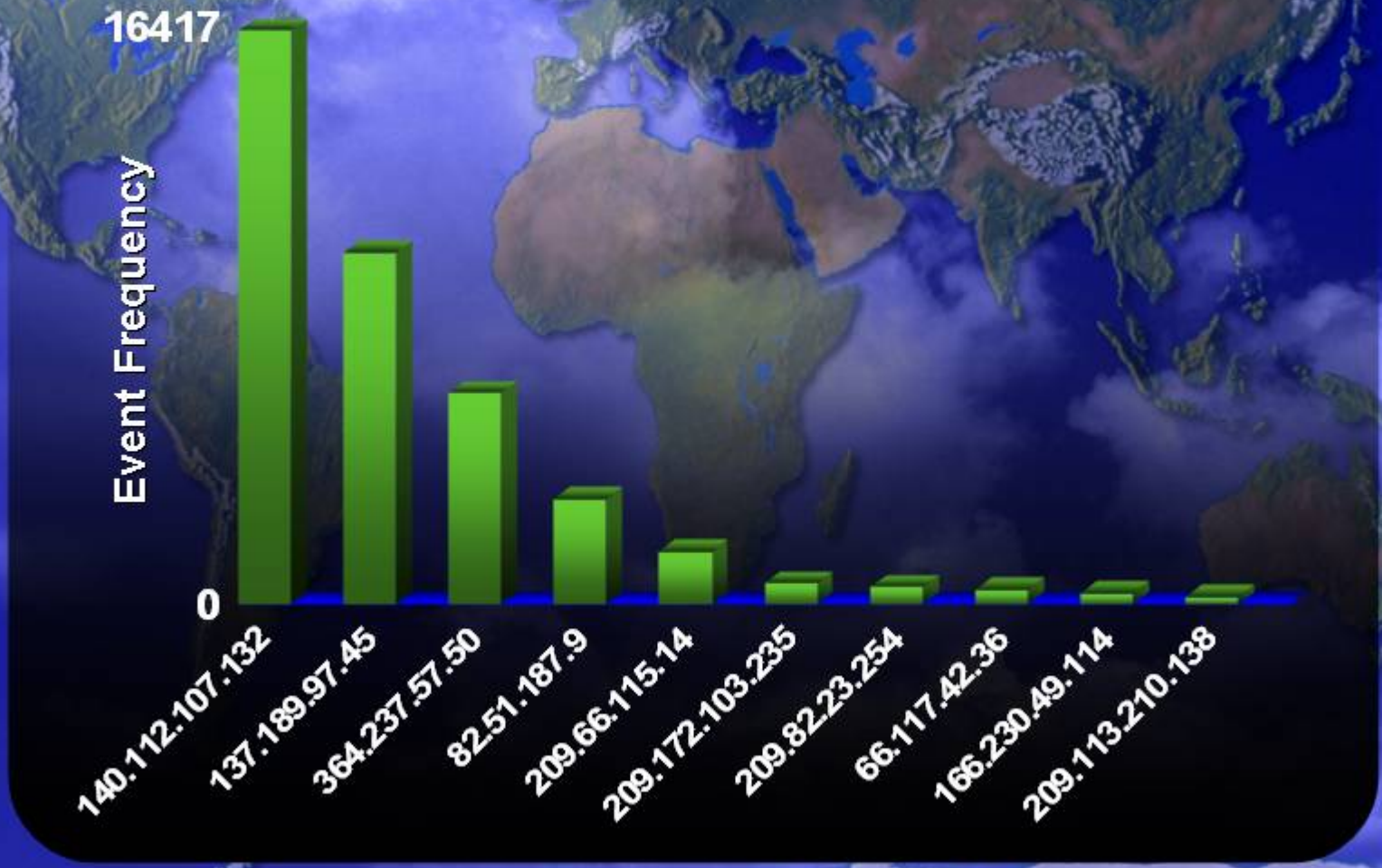
Top 10 Attackers

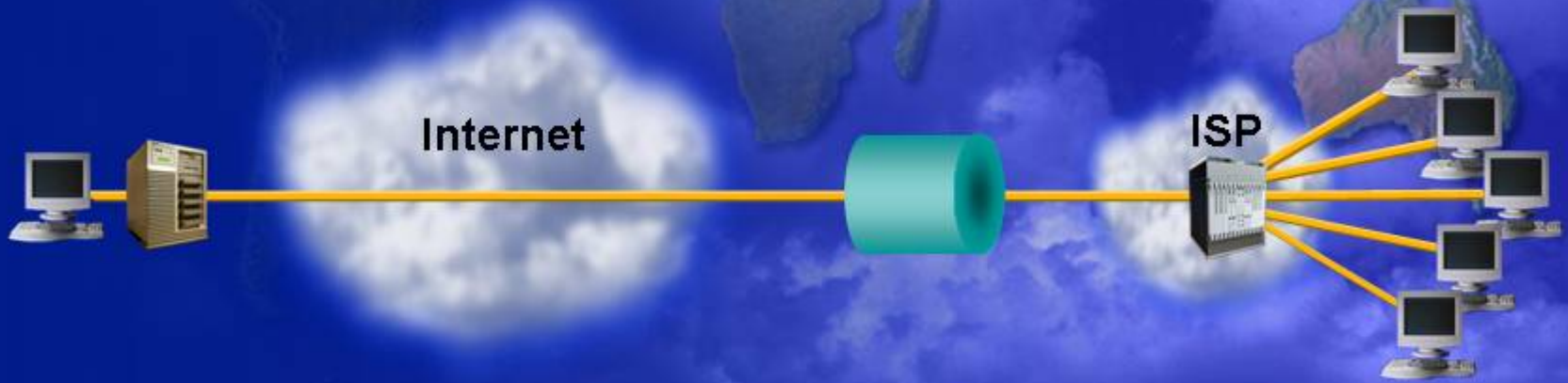


End System Multicast from CMU

Carnegie Mellon

Dynamic Services in the Network

Dynamic Services in the Network



TechCentral

Researchers create Net "overlays" to test new technologies

internetnews.com

June 24, 2003

PlanetLab 'Slices' Into Alternate Internet Universe

By Michael Singer

COMPUTERWORLD An IDG company

PlanetLab builds testbed for new Internet services

Goal is 1,000 nodes piggybacked on the Internet

By Peter Sayer, IDG News Service
JUNE 25, 2003

The Moscow Times.com

New Internet Applications in the Making

MSNBC HOME

Internet gets its own test network

'PlanetLab' aims to lower cost, risk of rolling out new services

POWERED BY indiatimes

Researchers building Internet test-bed

Clip

THE WALL STREET JOURNAL

Intel, HP Help Academia Set Up Web Test Network

By Don Clark

BusinessWeek online

Intel, universities create world network

A host of academic and industrial heavyweights band together to take the lag out of getting data from halfway around the globe.

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"As more and more processes shift from analog to digital and are dependent on being available anytime, anywhere, the importance of the Internet's resiliency can't be underscored enough. PlanetLab provides Intel, HP and our partners and customers with an environment for testing the next generation of distributed applications and services, and after 18 months of successful scientific trials we are confident that we now can begin deploying and testing revolutionary, planetary-scale commercial services that will change the way business is done on the Internet."

Shane Robison
Executive Vice President
Chief Technology Officer
Hewlett Packard

hp invent

"PBS has already been working with Intel on the design of ACE, an integrated digital system for automating and monitoring the broadcast operations of participating PBS member stations using Hewlett Packard computer systems. PlanetLab gives us the opportunity to take our collaboration further by providing a way of testing and developing system-wide applications like HDTV content distribution."

André Mendes
Chief Technology Integration Officer
Public Broadcasting Service

PBS

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Our Vision for the New Net

Packet Communication → Service Hosting Platform

Routers → Routers/Servers/Disks

End-to-end → Edge → Everywhere

Your Role

Join PlanetLab

Participate in the internet transformation


The NEW Net
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